



# Chelmsford Amateur Radio Society Newsletter

## February Meeting

**Tue 5-Feb-2019, 7:30-10:00pm**  
**Oaklands Museum, Moulsham Street**

## Data Modes for all Occasions

**By Dave Cutts M0TAZ**

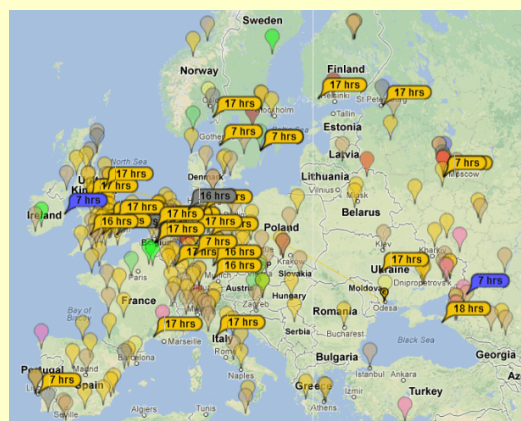
For the February meeting, David Cutts M0TAZ will present on the wide variety of Data modes. Whilst CW and RTTY go back to the early days, modern datamodes use tailored modulation and error correction.

Nowadays there is quite a variety from PSK, WSPR, the JTxx family etc etc. This can do wonders for efficiently using RF and increased range, yet with modest powers or difficult propagation. Dave will explain some of their basic principles and variety (and help you understand for when the next one comes along!)

Dave operates most data modes, and enjoys RTTY contests:

*"I don't chase awards, but do enjoy keeping track of my LoTW digital and WAS count. I enjoy alternative data modes, so quite often can be found in ROS, JT65, JT8, JT9, MFSK or Olivia modes. Experimenting with 160m loaded vertical on JT65 over the winter."*

The famous CARS Raffle and refreshments will feature too! - do pop along.



**See CARS @ Canvey Rally! – Sunday 3<sup>rd</sup> Feb**

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## Club Diary

Sun 3-Feb-2019	Canvey Rally – 10am at the new venue!	Cornelius Vermuyden School, SS8 9QS
Tue 5-Feb-2019	Data Modes for all Occasions – David Cutts M0TAZ	Chelmsford – Oaklands Museum, 7:30pm
Mon 18-Feb-2019	Skills Night	Danbury Village Hall 7:00pm
Tue 5-Mar-2019	Offshore Radio – Jim Salmon 2E0RMI	Chelmsford – Oaklands Museum, 7:30pm

## Club Nets

CARS meets for talks/events on the first Tuesday of the month. The subsequent Tuesdays have club radio nets as follows:-

- **2<sup>nd</sup> Tuesday in the Month – VHF**

The CARS VHF FM Net uses GB3DA from Danbury starting at 8pm (local).

GB3DA is 145.125MHz Input and 145.725MHz Output - and CTCSS-only (110.9Hz), 2min timeout

If for any reason GB3DA is not available then 145.375 Simplex will be used. Vertical aerials are best for this

- **3<sup>rd</sup> Tuesday in the Month - UHF**

The CARS UHF FM Net uses GB3ER from Danbury and starting at 8pm (local).

GB3ER is 434.675MHz Input and 433.075MHz Output - and is CTCSS-only

Vertical aerials are best.

- **4<sup>th</sup> Tuesday in the Month - HF**

The CARS 80m Net on "3756kHz" Night, SSB and starting at 8pm (local).

Horizontal aerials are best. The idea is to enable distant CARS Members to join the Net.

- **5<sup>th</sup> Tuesday in the Month (when there is one!) - MF**

This is the CARS Top Band Net on 1947/1950 kHz +/-QRM, LSB and starting at 8pm (local).

Horizontal aerials are usually used for this Net. A reminder - limit your power to a max of 30 Watts, please.

## Training & Exam Dates

Our training pages have sessions listed for Foundation, Intermediate and Advance.

We start 2019 with both Foundation and Intermediate training – see more info and dates online

**Remember that the syllabus changes in Autumn 2019, so sign up early for a course/exam before that!**

Our training manager Peter M0PSD is keen to hear from candidates for the courses, as well as any needing practicals or other help. The 2019 Feb-June Skills Nights also have slots available

Course	Dates	Comment
Foundation-39	Thu Jan-17 <sup>th</sup> – Feb 21 <sup>st</sup>	Foundation - but with Intermediate in parallel
Intermediate-18	Thu Mar-21 <sup>st</sup> – May 2 <sup>nd</sup>	Intermediate - but with Foundation opportunities as well

**Contact:** Peter Davies M0PSD, [training2019@g0mwt.org.uk](mailto:training2019@g0mwt.org.uk) Web: [www.g0mwt.org.uk/training](http://www.g0mwt.org.uk/training)



Follow @TrainWithCARS



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## January Meeting: Sub-Surface Comms

The January meeting was unusually on the second Tuesday, January 8<sup>th</sup> to avoid New Year's day. Despite the cool winter evening it was well attended to hear all about a real challenge for radio – underground systems.

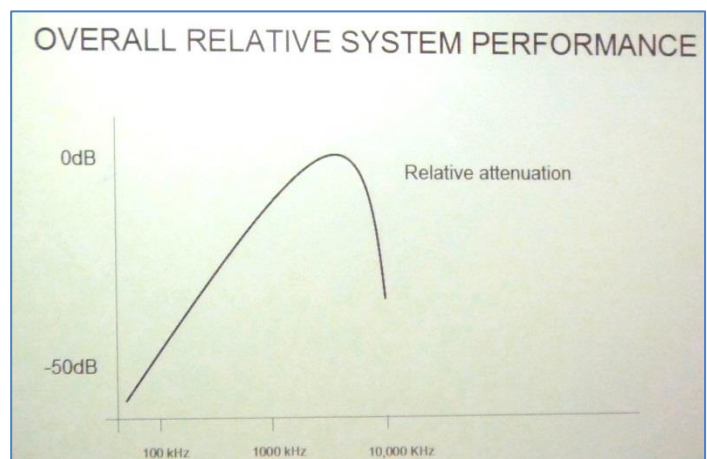
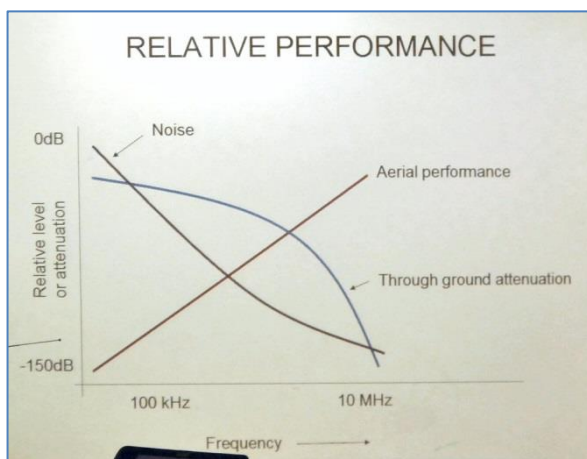
Peter Bridgeman G3SUY gave a well-illustrated talk of his time in Plessey and their development trials of the 'Figaro' system for use by the emergency services in tunnels. Venues included the London underground, or some other railway and sewer installations as well as a government bunkers!



The development of Figaro in the 1970s ran in parallel to VLF cave rescue equipment such as the Molephone by Lancaster University and later the Heyphone by John Hey G3TDZ) which run at ~87kHz

Unlike VLF caving (or current UHF approaches), Plessey had remarkable success with HF and loop antennas. The happy reason for this was a number of reasons as became apparent in early tests:

- The loop antennas were relatively efficient for their size/wavelength (esp compared to VLF) and tended to suppress noise
- Background noise levels were generally better at HF than VLF
- The cables lining a number of the manmade tunnels effectively carried induced currents or acted as offset coax and could assist the propagation - rather than the usual problem where a cut-off-waveguide effect quickly kills propagation



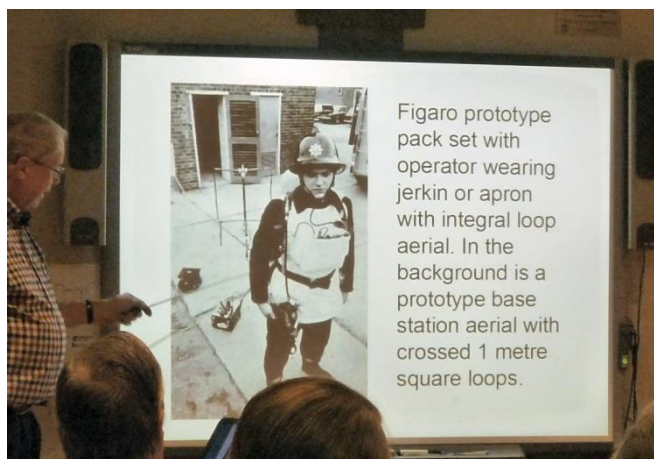
**Some of the factors affecting performance that made HF a good choice**

So for Figaro the optimum frequency range was between 3 and 6 MHz. And the reason for the name?...

**Fire Ground Apparatus for Radio Operations**

cont'd...





**Peter MG3SUY describing Figaro equipment**

The trials ended up in all sorts of locations including various London underground tunnels, Clapham Common Deep Shelter, the Wheel Jane and South Crofty mines and the Severn Railway tunnel. Some of the metallic lined tunnels did indeed act as waveguides where performance dropped down within yards.

Despite a great technical effort over two years of trials, the government would not pay for the development costs that would be spread and levied over the production models. In the end only two systems were ever purchased - one by the Home Office and the other by the London Fire Brigade.

However Figaro did see real action once – during the Feb-28<sup>th</sup> 1975 Moorgate disaster. It was later retired around 1986 and superseded by leaky feeder being installed in the London Underground tunnels.

- Our thanks to Peter G3SUY for a great piece of storytelling!!

Following the break the CARS Raffle was drawn. With Chairman Elliot 2E0JSE away, Bob G4MDB did the draw and also made a somewhat overdue presentation...



**Bob G4MDB presenting John G8DET with his delayed certificate for the Constructors Competition 3<sup>rd</sup> Place**

**Figaro** - Useful web page: [https://www.dtels.org/html/sub\\_surface\\_radio.html](https://www.dtels.org/html/sub_surface_radio.html)

## 1919 – Looking Back by Tim Wander

Now - going back a bit before 1919 – At the start of WW1, the Marconi New Street works (and indeed the whole Marconi Company) was taken over by the Admiralty – partly due to security concerns with its Italian namesake and pioneer.

During WW1 Italy couldn't make its mind up which side to be on and in August 1914 Marconi himself was declared an illegal alien and with his entire family was arrested and interned in Luttrell's tower at the bottom of Southampton water. His equipment was smashed, policemen were placed outside his door, and he was placed under house arrest. This was same country has given him an honorary Knighthood at the start of the same year.

Marconi only "escaped" in December 1914 having been made a Senator (MP), envoy to the Pope and given diplomatic immunity. He immediately sailed for America and did not return to the UK, other than for Cowes week races, until 1923 and hence he missed the birth of British broadcasting and even the BBC.

This may have been useful as he was never a supporter of radio speech broadcasting. His whole company and its worldwide empire was based on its simple business model of point to point messages. Marconi sold radio transmitters and receivers to both ends, built and installed the stations, provided the operators, maintenance contracts and of course, in many cases, he charged for the service and even each message.

For radio broadcasting his company would provide one transmitter that might last for 30 years. The station broadcast to an audience of millions who all listened in for free. Where was the business in that? This problem still echoes through the years – just how do you, or should you, fund the BBC today?

Speaking of the BBC, it all began in 1919 at the New Street works.

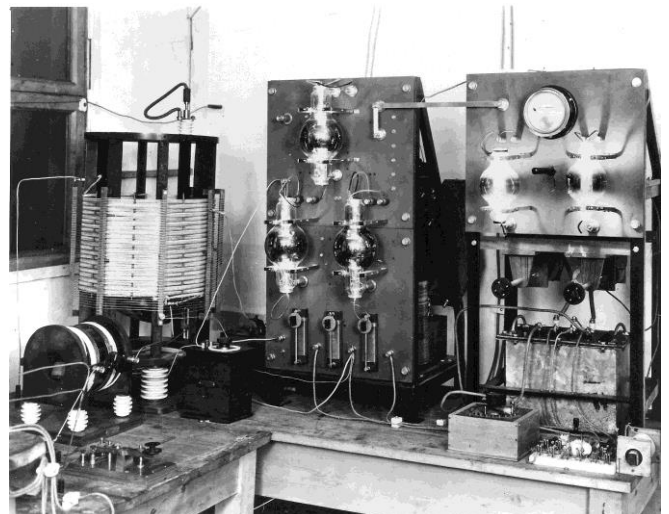
During 1913, in the aftermath of the Titanic disaster and the subsequent massive demand for wireless equipment after the SOLAS regulations were published, the New Street works had grown beyond all recognition.

Over a dozen army huts had been placed inside the New Street compound to accommodate the load of war time, with work subcontracted out across Essex. In 1919 the Company and the New Street works was handed back to the civilian management. But not to Marconi himself.

In 1919 the Company also recruited the entire complement of engineers from the RFC (now the RAF) wireless telephony development school that had been set up at Biggin Hill (from Brooklands via Joyce Green). Huge names in the history of radio development now found themselves part of the massive Marconi development team. Prince, Ditcham, Round, Van de Welde, Furnival, Maclarty, Trump and of course Peter Eckersley – all found their way to the Company.

Many of these soon found themselves operating from the new Writtle site at the bottom of Lowford (now Lawford) Lane from another ex-army (actually ex-RNAS) Hut that had been left behind when Writtle was used as a RNAS flying field - part of the WW1 anti-Zeppelin defence line.

While Ditcham and Round set about developing huge experimental (15kW) telephony transmitters at New Street, the Writtle engineer's hut became the research centre for the Airborne wireless development section. Here the team pioneered the development of radio for international civilian air traffic.



*The 2MT Writtle Transmitter*

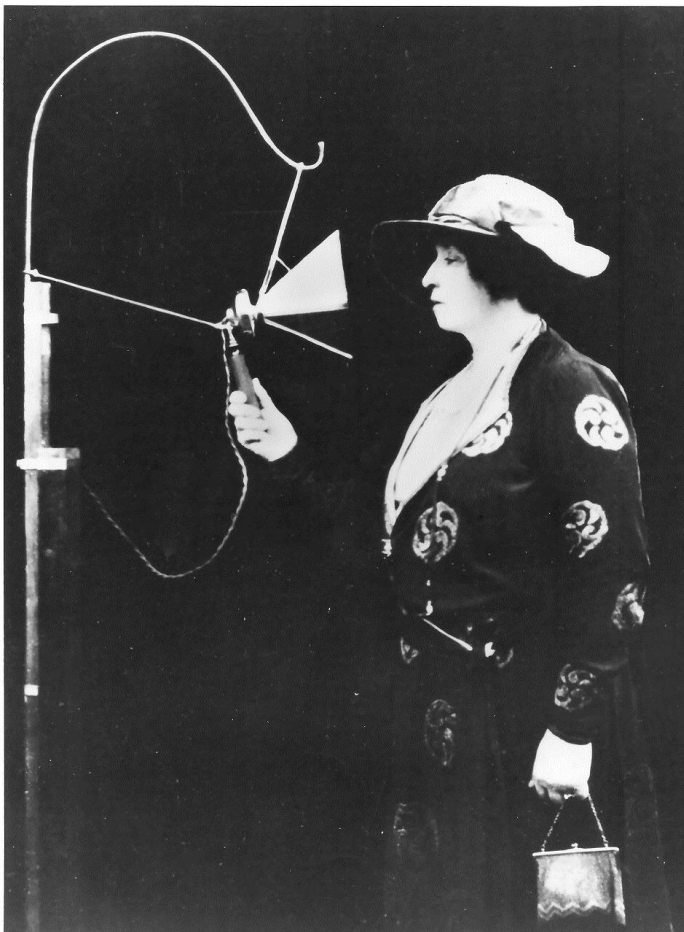


After Ditcham and Round ran the history making broadcasts in 1920 – Winifred Sayer, Melba, Clara Butt and Melchior among them. In 1922, it was the development of “Talking Wireless from Writtle”, under the famous callsign of 2MT Writtle that would lead directly to the BBC. The original 2MT hut is in Sandford Mill.

In 1919 Marconi also bought his motor/sailing ship and renamed it (*Elettra*) and used it for research into all sorts of things. He even found by accident what would later be developed as radar, although this (American) term was not used until 1944. There are photos of him smoking in the thing with lead acid batteries under the table!

*Mrs Winfred Collins - the first lady to sing on British Radio from New Street, March 1920.*

At Sandford Mill we have a copy of his unpublished memoirs concerning his time at Writtle, where in 1939 he led the team developing the 1155 receiver for RAF bomber and coastal command. This was in the same Hut where Peter Eckersley first broadcast in 1922....Almost 100 years ago.



*Dame Nellie Melba*

**Tim G6GUX**

***Historic Consultant, Author, Lecturer***

<http://marconibooks.co.uk>

<https://voicesoverpasschendaale.co.uk>

*(after an outline from John G8DET)*



## January Skills Night

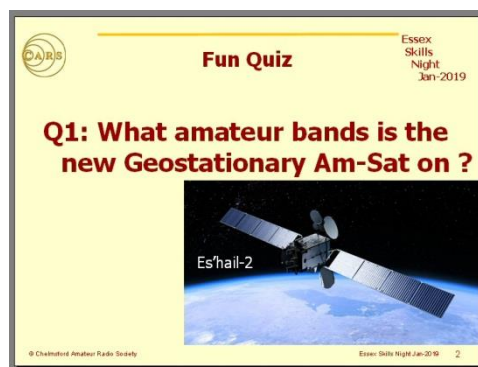
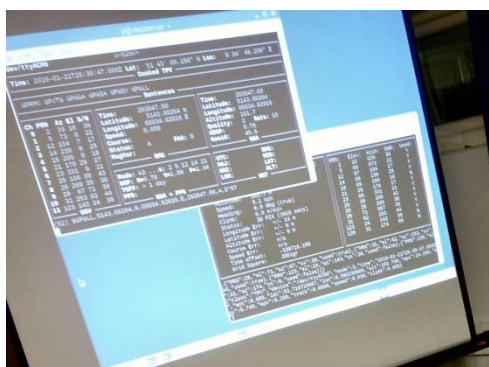
Monday evening, 7pm January 21<sup>st</sup> 2019, was Essex Skills Night, run by the CARS Training Team. For the first of the 2019 events there was emphasis on Training and Furthering the Skills of Radio Amateurs. Despite a cold evening there were plenty of attendees and of course it was also great time for socialising and refreshments, along with a mini table top sale, raffle and quiz.



Some nice Cake as well as tea, biccies – and a liquid raffle prize!



Essex CW had Dean G4WQI present with a chance to take a look at a QRP transceiver



Murray had Satellite Tech - A Raspberry Pi GPS Demo - and another Satellite in the Quiz

More Photos: <http://www.g0mwt.org.uk/skills/essex-skills-jan2019.htm>

Next Event: **Monday 18-Feb-2019**

**NB: Skills Nights are a great opportunity if you need a Training Practical or even an Exam session!**

## Training News

December proved to be a rather tough Advance exam...

However we are pleased to report the following successes and new callsigns from that session:-

- Jon Pinto                      M0UIU (previously 2E0NNP, M6NNP)
- Trevor Blake                M0UKE (previously 2E0GMI, M6NNI)
- Daniel Crane                M0MYM (previously 2E0YYA, M6YYA)
- Christopher Stoffel        M0OCS

The New Year began with a rather smaller exam session held on January 9<sup>th</sup>, where Daniella fared well and passed her Advanced exam with Merit:-



**Daniella looking pleased – and now G6OCX (callsign specially arranged!)**

Foundation Course 39 is now in progress aiming for the Feb-21<sup>st</sup> exam session. In parallel it has both Intermediate practicals and some Advance revision in progress as well



**Intermediate Practicals underway in the Hawkins room**



## Learn Morse in 2019!

Morse classes started again at Danbury Village Hall at 7pm on Thursday, 17<sup>th</sup> January, 2019:-

- If you are a complete beginner Danbury is the best place - you will have your own "Elmer" to instruct and guide you.
- If you just want to refresh your morse skills, Danbury has a group of enthusiasts who will be pleased to help.
- If you just want a pleasurable evening with CW friends, just come and join us for a fun evening whenever it suits you.

Morse Code (CW) enables DX working at low power levels. Want to be proficient at Morse ?

CARS offers Morse classes on Thursday evenings at Danbury, run by Andrew Kersey G0IBN

More at: <http://www.g0mwt.org.uk/training/#CW>

MORSE CODE	
A	.-
B	.-.-.
C	-.-.-.
D	.-.-.-
E	..
F	..-.-
G	.-.-
H	....
I	..
J	.-.-.-.
K	.-.-
L	.-.-.
M	---
N	.-.
O	---
P	.-.-.
Q	.-.-.-
R	.-.-.
S	...
T	.-
U	..-
V	...-
W	.-.-.
X	.-.-
Y	.-.-.-
Z	---.
Period .	...
Comma ,	.-.-.
Question mark ?	...-.
Apostrophe '	.-.-.-.
Exclamation mark !	.-.-.-.
Slash, Fraction bar /	.-.-.-.
Parenthesis open (	.-.-.-.
Parenthesis closed )	.-.-.-.
Ampersand, Wait &	.-.-.-.
Colon :	.-.-.-.
Semicolon ;	.-.-.-.
Double dash =	.-.-.-.
Plus +	.-.-.-.
Hyphen, Minus -	.-.-.-.
Underscore _	.-.-.-.
Quotation mark "	.-.-.-.
Dollar sign \$	.-.-.-.
At sign @	.-.-.-.
1	.-.-.-.
2	.-.-.-.
3	.-.-.-.
4	.-.-.-.
5	.-.-.-.
6	.-.-.-.
7	.-.-.-.
8	.-.-.-.
9	.-.-.-.
0	.-.-.-.

## Free Canon Ink Cartridges

I have been given a bag of brand new Canon C520/C521 range Ink Cartridges which will fit these models:

- Canon Pixma iP3600, iP4600, iP4700,
- MP540, MP550, MP560,
- MP620, MP630, MP640,
- MP980, MP990,
- MX860, MX870

I will try and remember to bring them to the next CARS Meeting. Interested? - **Contact: John G8DET**

## Grow Your Own!



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